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METHOD OF CODING OF THREE-DIMENSIONAL STRUCTURES OF DATA ON THE VERTICAL-HORIZONTAL ARCHITECTURE.

Substantiation of the need to improve the theoretical basis and the processing technologies of videoinformative resources towards IP-destination patterns for three-dimensional data structures is carried out. The stages of the development of three-dimensional polyadic numbering in the direction of reducing of gravimetric coefficients of the elements with the use of vertical-horizontal architecture are stated. Forming of code is carried out for the mode of variable length of 3-d poliadical number and even length of a codegram for the presentation of code value.

Keywords: *three-dimensional structures of videoinformation, polyadical number.*

Introduction

The rapid development of information and communication technologies is one of the motivations behind development of qualitatively new videonformation systems [1; 2]. Topical difficult aspects in a practical sense is that grant videoinformational access resources to making the new generation represented in 3D space. At the same time, such funds lead to great strain on computing and telecommunication-systems. It becomes evident that the existing information processing and transmission technologies are unable to cope with another wave of relying for two growing amounts of data [2; 3]. This situation is compounded by the need to provide resolution at the right level of characteristics of information security. Hence, the problem faces the further development, as theoretical basis and technology submission, processing and encoding of video information. One of the areas, as it has been shown in boats [4; 5], is to establish a theoretical framework and methods of encoding a three-dimensional data structures. The need for what is: a significant increase in applications that use the three-dimensional organization of data; the possibility of identifying new structural legislation dimensions for 2-D structures in terms of transfer in three-dimensional space.

In the case of processing of 3D structures of a question on the selection of the architecture of the space to build coding technology. A variant of universal treatment, suitable for arbitrary structures, is to use a vertical-horizontal architecture [5]. Then at the logical level architecture 3D structures is of the form of vertical layers. This research defines the purpose of the article, namely the development of 3D structures of data encoding using the vertical-horizontal arch-texture pattern.

Main Part

From the perspective of a numeric descriptions in the article it is suggested that the handling of 3D data structures (TSD) as 3D polyadic Egyptian number (if). In General, code of a polyadic number was the sum of the values of the elements IF the appropriate weight filed. For the 3D case, have [4; 5] where is the weight of the item.

$$N^{(3)} = \sum_{j=1}^{n_{стб}} \sum_{i=1}^{n_{стр}} \sum_{z=1}^{n_c} a_{j,i,z}\,\omega_{j;i;z}$$

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The weight factor of the polyadyc number is equal to the number of permutations with repetitions Government composed of younger members. The value of the weight depends on the direction of the elements of polyadic number and the quantity. Since the value of production is positive, with an increase in the number of items in the value of the code will be. Then delete the information loss due to overflow the edges of the grid is assigned a value can be, if, in the case of uniform (continuous) length bit mesh generate code for a variable number of elements of the VSD (variable length poly-ADIC numbers):

$$m = var; \qquad S(N^{(3)}) = const. \qquad (1)$$

As traversing members IF a choose the direction from senior to junior grade . Since the formation of three-dimensional structures seen from-SUS on image processing, as traversing members are encouraged to use the following sequence: "on this top-down, on depth of the box columns and rows from left to right. This pattern is characteristic for the order processing personnel. The expression (1) dictates the terms when the number of elements in advance) 1 polyadic number is not known; therefore, code generation, and, therefore, you are encouraged to exercise the weight calculation on recurrent scheme; 2) number of digits in the code view of CCF is constant, i.e. where is the length of a word. It follows that before adding the code to the current value of led-ranks test condition

$$N_{jiz}^{(3)} \le 2^{M} - 1, \qquad (2)$$

where is the code value for the step of processing; – the maximum value that is represented by the binary digits. However, the condition (2) used to test for overflow words cannot be. This is due to the fact that the emerging market economies has led to the current value of the CCF. At the same time restoring the CCF on the receiving side of the step process the important element is unknown. It checks for overflow words should be on the basis of information known on the receiving side. As such information offers – the use of basis elements of the 3D polyadic number. Indeed, by definition weighting factor of polyadic number is the number of combinations, made up of elements of the CCF have already processed on the step. Therefore, you actually use the product. Then to check for overflow of a word is used, and the validation rule will look like.

The first element of the three-dimensional structure of a chief 3D polyadic number. If the number of digits to represent the dynamic range of the first element is greater than the length of the word, then you have two options: to reduce and reduce the dynamic range of the data to be processed, for example, as a result of differential pulse-code modulation; increase the length of a Word. Development of a recurring pattern of the code (Fig. 1).

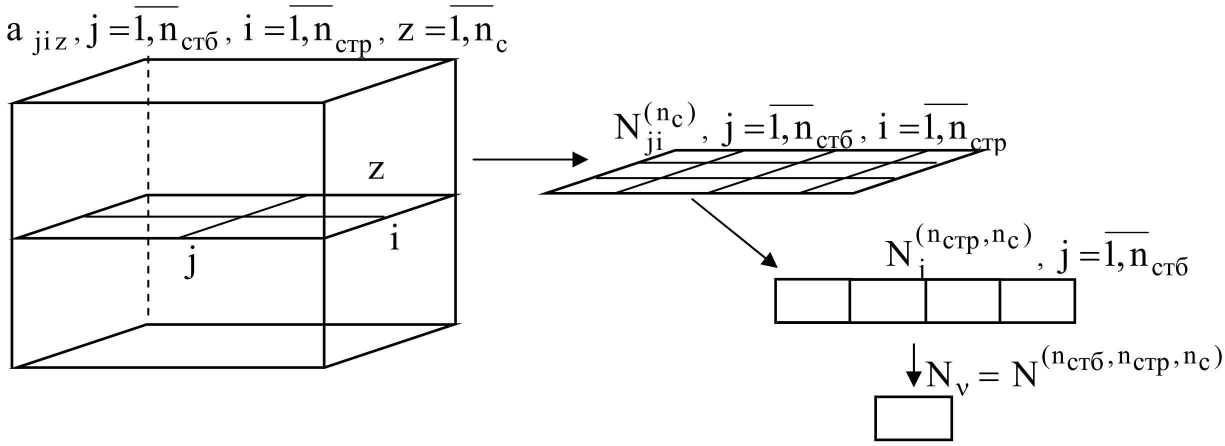

Fig. 1. Scheme of an architecture of 3D data structure

$$V_{ji}^{(z)} = \prod_{\gamma=1}^{z} \psi_{ji\gamma} \leq 2^{M} - 1, \tag{3}$$

$$N_{ji}^{(z)} = N_{ji}^{(z-1)} \psi_{jiz} + a_{jiz}, \tag{4}$$

Vertical direction processing TSD. If the grounds for the first CCF lane is inequality, then. Similar to the first element of the second CCF will get vertical. Step on the handle is vertical, the condition is tested (3) where is the number of valid combinations, made up of elements of the first vertical 3D polyadic number. In the case of the inequality (3) is calculated on the basis of the previous code value by the formula (4) where is the code value, calculated for the first vertical heating-elements, where is the code value for the first vertical; the meaning of the code, which was formed on the base of the element; accumulated-work basis for sections of height. String direction code generation is to address codes selected verticals CCF as polyadic number of elements in the one-dimensional. And be aware that the rooms are limited at the top. When processing a number connected to the following:

$$V_j^{(i,n_c)} = \prod_{k=1}^{i} \prod_{z=1}^{n_c} \psi_{jkz} = \prod_{k=1}^{i} V_{jk}^{(n_c)} \le 2^M - 1. \quad (5)$$

The condition is tested at the overflow. This amount is calculated, equal to the number of valid combination, composed of elements of the CCF (5). If the value does not exceed the value, the recurrent expression for calculating code numbers for elements has the form, where is the code value for the elements, i.e. for -consistency of codes.

To demonstrate that the rule, given the disparities (5), could be used to prevent the overflow of a Word, you must show that this is an upper bound of the range of magnitude. This will prove the next. Theorem on the top of the vertical heating code. Polyadic code value of whose elements are 3D polyadic number branch number limited was on top size:

$$N_j^{(i,n_c)} < V_j^{(i,n_c)}. \quad (6)$$

We introduce the replacement values in the latter ratio on size. The given inequality we get. Consequently, inequality (6). The theorem is proved.

$$N_j^{(n_{стр},n_c)} = N_j^{(n_{стр}-1,n_c)} V_{j,n_{стр}}^{(n_c)} + N_{j,n_{стр}}^{(n_c)} \quad (7)$$

Treatment of column with the heating ends after analysis of the element. If the inequality, then the value of the code that was obtained in the previous step, increasing the importance of (7) where is the code value for a sequence of values. As a result of the processing of all sequences on all columns of the CCF will have to configure the codes

$$\{N_1^{(n_{стр},n_c)},\ldots,N_j^{(n_{стр},n_c)},\ldots,N_{n_{стб}}^{(n_{стр},n_c)}\}. \quad (8)$$

$$N^{(j,n_{стр},n_c)} = N^{(j-1,n_{стр},n_c)} V_j^{(n_{стр},n_c)} + N_j^{(n_{стр},n_c)} \quad (9)$$

Since the inequality (6) code limited the size of the top end, the sequence (8) can be seen as the polyadic number. Then you can further process the postolbcovuû 3D poliadyc numbers according to the following scheme: 1. If there is inequality, then the code value for the CCF as well (9) where is the meaning of the code in the previous step for the CCF. 2. On the contrary, when the code, then the value of the-m Sha-GE processing will be equal.

$$N^{(j,n_{стр},n_c)} < V^{(j,n_{стр},n_c)}. \tag{10}$$

For the word overflow exceptions to indicate that the code is limited to the above value. This will prove the following theorem. Theorem on the top of the code-numbers. Polyadic code number (8), elements of which are but a measure of the vertical planes CCF is limited above magnitude-Noah (10) proof. Let's write down the recurrent expression (9) for the code:

$$N^{(j,n_{стр},n_c)} = N_1^{(n_{стр},n_c)} \prod_{\eta=2}^{j} V_\eta^{(n_{стр},n_c)} + \ldots + N_{\xi-1}^{(n_{стр},n_c)} \prod_{\eta=\xi}^{j} V_\eta^{(n_{стр},n_c)} + \ldots +$$

$$+ N_{j-1}^{(n_{стр},n_c)} V_j^{(n_{стр},n_c)} + N_j^{(n_{стр},n_c)}.$$

$$N^{(3)} = N^{(n_{стб},n_{стр},n_c)} = N^{(n_{стб}-1,n_{стр},n_c)} V_{n_{стб}}^{(n_{стр},n_c)} + N_{n_{стб}}^{(n_{стр},n_c)},$$

Enter the code for the replacement value. Then the inequality (6) the last expression will have the following upper bound. From here the trail that the inequality (10) is made for. The theorem is proved. 3. At the end of the code for all elements of the CCF is equal to the value of the code generated for the last number of the vertical section of the three-dimensional structure of, where is the code value for the CCF.

Thus, on the basis of the expression (3) through (10) built a three-dimensional polyadic coding based on vertical-horizontal architecture TSD for a uniform grid x and a variable number of elements IF. Developed by codingprovides an exception of combinatorial redundancy due to the composite-dynamic range in three areas of the three-dimensional structure without loss of information.

Conclusions

1. We developed three-dimensional data coding based on three-dimensional polyadic numbering in the direction of reducing the weighting factor heating elements-using vertical-horizontal arch-texture pattern descriptions of the TSD.

It uses variable-length heating mode and uniform length pattern generation for code values. To avoid loss of information due to the overflow of the word invited to compare quantities basis close-up CCF with the best possible value, the equivalent of the specified length of a Word.

2. Compression is achieved by eliminating structural excess invoice amount, due to the limited and unequal human dynamic ranges of items of video simultaneously on the three coordinators there 3D data structures. Value of winning in 1-ficiente compression at the expense of additional accounting regularities in sent the third coordinate range is greater than the value of the 3D polyadic number on the grounds were given reason to 2D polyadic number.

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